What This Course Covers

- Mathematics and principles necessary to program a modern computer graphics engine
- Practice working with WebGL graphics library to create synthetic 2D and 3D images
- Limited exposure to digital art tools (e.g., Blender)
What does CSC 240 fulfill?

- Minor in Computer Science: Digital Arts
- Arts & Technology minor
- Distribution requirement for the Computer Science major (Programming, Theory)
Prerequisites

- **CSC 111**: Introduction to Computer Science
- **Math 111**: Calculus 1
Course Goals

- Understand algorithms and math behind graphics
- Build programming skills
- Enable artistic expression
- Resources for pursuing computer graphics further
Topics (tentative)

- Image formation & representation
- Lines, 2D shapes, and fill algorithms
- Transformations
- Splines and Bezier curves
- Perspective
- 3D modeling, render pipeline
- Lighting, shading, and reflectance
- Texture mapping
- Ray tracing
- 3D printing
- Animation
Course Web Page

http://cs.smith.edu/~nhowe/240
Assignment Notes

- Mix of programming and pencil-and-paper exercises
- Weekly (usually due Monday nights)
- In-class labs not turned in, but count toward participation
- Email me if you do not have a laptop computer
Assignment Notes

- WebGL (i.e. OpenGL in java script/html) and Blender
- Submitted through Moodle
- 4 credit course = 12 hours/week

3 in class, 9 outside class
Textbook

- Free, online, I will post sections on the calendar

- **Introduction to Computer Graphics** by David J. Eck
  
  [http://math.hws.edu/graphicsbook/](http://math.hws.edu/graphicsbook/)

- Group commentary via [Perusall](http://perusall.com).
Online discussion

- Piazza
  - Class discussion
  - Homework help
  - Clarifications
  - Announcements

https://piazza.com/class/keaageo945d2b5?cid=1
(linked from course page)
Assessment

- Homeworks: 50%
- Take-home midterm exam: 10%
- Take-home final exam: 10%
- Final project: 20%
- Participation: 10%
  - Weekly contact
  - Video/reading responses
  - Asking/answering questions on Piazza
Honor code

- Collaboration & discussion encouraged!
- Please cite:
  - student collaborators
  - online resources, especially any code
  - books
- For most assignments: individual or pair, original code, produced and understood by you
- Pairs must switch on each assignment
"Smith College expects all students to be honest and committed to the principles of academic and intellectual integrity in their preparation and submission of course work and examinations. All submitted work of any kind must be the original work of the student who must cite all the sources used in its preparation."
Course Policies

1) **Email**: use Piazza for all questions that might be relevant to others in the class

2) **Posting code**: do NOT email or post long blocks of code on Piazza

3) **Late work**: manage your own extension budget
   no late work ➔ one assignment dropped
   Exceptions: accommodations letters, notice from Dean or Health Services
Course Policies

4) **Individual meetings**: office hours, plus others as I can accommodate in my schedule

5) **Attendance**: two missed classes without affecting your participation grade

6) **Electronic devices**: fine in class as long as directed towards class material

7) **Random partners**: frequently throughout the semester
Resources

- Piazza
- Office hours (instructor and TAs)
- Fellow students
- Spinelli Center for Quantitative Learning
- Accommodations (turn letters in early!)
Student Information

Please fill out the questionnaire so I can plan properly!

https://tinyurl.com/CSC240Fall2020Survey
Review Questions

Please answer these in the Lecture 0 Feedback form.

1. What topic are you most excited for?
3. When are assignments usually due? **Monday nights**
4. Can I discuss assignments with classmates who are not my partner? **Yes! Please do!**
5. Can I ask a classmate who is not my partner to help find a bug in my program? **No, since you cannot show them your code. You can visit TA hours or office hours.**

*Please pause the video now and fill out the form!* [https://forms.gle/JWPupX4QZXv3Kcwm6](https://forms.gle/JWPupX4QZXv3Kcwm6)